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A NEW CAVE-FREQUENTING CARABID BEETLE FROM THE SNOWY MOUNTAINS REGION OF NEW SOUTH WALES

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Introduction

On grounds of present climate and of presumed past glacial history, the extensive cave-systems of the Snowy Mountains might appear to be the most likely locality in mainland Australia to support a diverse and closely adapted arthropod fauna (Moore 1972) yet despite considerable exploration by biologically orientated speleologists, few such species have been discovered and in particular, the paucity of carabid beetles is both puzzling and disappointing. In effect, the present record of a new species of *Teraphis* Castelnau provides the first instance of a clearly cave-adapted carabid from the region and also, the first occurrence anywhere of a cavernicolous member of the subfamily Psydrinae. The discovery is therefore of special interest.

Teraphis cavicola sp. n.

Figs 1-2

Mostly shining black when mature: legs and antennae dark reddish-brown; palpi lighter, brownish-yellow.

Head rather small, impunctate; frontal furrows arcuate, strongly impressed; eyes reduced, subplanar, with few facets; labrum transverse.

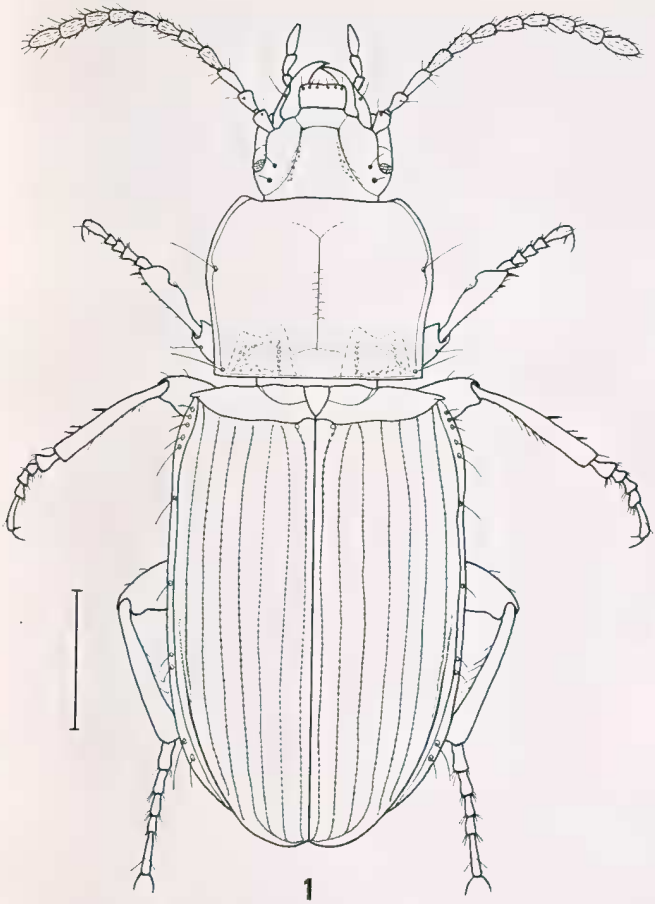
Pronotum transverse, widest about the front third; anterior margin concave, slightly sinuate; posterior margin rectilinear; sides lightly to rather strongly rounded on front two-thirds, then nearly parallel to base; basal angles rectangular, the impressions broad, coarsely punctate and bi-impressed.

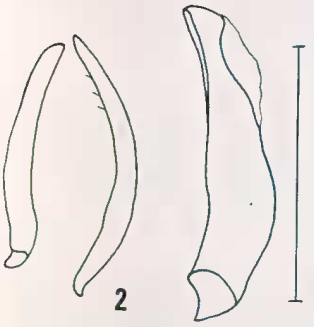
Elytra subparallel except on apical curve; striae regular and markedly crenulate; intervals lightly convex, the third without a discal pore; humeri prominently dentate; subhumeral margins smooth; scutellary strioles absent: aedeagus slender; median lobe membranous over much of dorsum; right paramere with a few short, subapical setae.

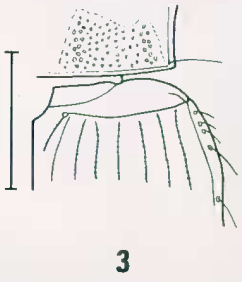
Length: 5.9 - 6 mm; maximum width: 2.2 - 2.3 mm.

Holotype ♂ (slightly immature), River Cave, Yarrangobilly, N.S.W., 7.iii.1971, E. Hamilton-Smith, in the South Australian Museum, Adelaide. Paratypes, 2 ♀♀, same data as holotype, in the South Australian Museum and in the author's collection.

Teraphis cavicola is distinguished within its genus, as restricted by me (Moore 1963), by the great reduction of the eyes, although *T. crenulata* (Sloane 1923) shows this tendency to a lesser degree. However in Sloane's species (which is known only from the ♀ holotype from Mount Kosciusko, N.S.W., together with a ♀ topotype taken by myself, in January, 1965), the elytral intervals are obviously less convex than in *cavicola*; the third intervals carry a single setiferous pore; short but deep scutellary strioles are present on the first intervals; and the humeri (Fig. 3) are less prominent and less evidently dentate.







Figs 1-3. *Teraphis* spp. (1) *T. cavicola* sp. n., holotype ♂; (2) *T. cavicola* sp. n., aedeagus in right lateral view, with parameres detached; (3) *T. crenulata* (Sloane), holotype ♀, base of pronotum and elytron, right side. Scale-lines = 1 mm.

In effect, the eyes in *T. cavicola* have regressed almost to the same extent as in the monotypic genus *Trephisa* Moore (1963) and this could bring the validity of the latter into question. However, the type species of *Trephisa* (*parallela* Moore) differs from all *Teraphis* species (including *cavicola*) in its narrow, subcylindrical build and also in its minutely crenulate subhumeral (elytral) margins (a feature not noticed by me at the time of the original description). These differences would appear to justify retention of *Trephisa* as a separate genus, at least until the Australian fauna of the tribe (the Tropidoptini) is more fully known.

Discussion

The discovery of a cavernicolous species of Psydrinae is not entirely unexpected, in view of the strongly geophilous habits of members of the tribes Tropidopterini, Mecyclothoracini and Meonidini, and of their close morphological relationships with the cave-dominant Trechini. Indeed, occasional specimens of *Mecyclothorax ambiguus* (Erichson) and of *Meonis* species had earlier been detected (Moore unpublished), as presumed trogloxenes, during the biospeleological survey. Moreover, the above-mentioned *Trephisa parallela* is clearly an endogeous insect (the types were taken from beneath deeply embedded boulders in temperate rain forest) and the transition from the subterranean to the cave environment is but a small evolutionary step.

The simultaneous existence, in the Snowy Mountains, of microphthalmic cave-dwelling and litter-dwelling species of *Teraphis* is strong evidence that a transition of the above kind has in fact taken place, although the comparable levels of morphological adaptation shown by these two species would suggest parallel evolution, rather than a direct derivation of one from the other. Also, the limited extent of this adaptation indicates that entry into the cave environment may have been a comparatively recent event. Thus although further evidence concerning the status of *T. cavicola*, as a cavernicole, would be most desirable, the species appears likely to be no more than a troglophile. Unfortunately, nothing whatever appears to be recorded about the biology of surface-dwelling tropidopterines and it is therefore impossible even to speculate about the habits of the new cavernicolous species.

Acknowledgement

I am indebted to Mr Elery Hamilton-Smith for the opportunity to study his extensive material of cave-dwelling Carabidae, which has included the present interesting new species.

References

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